

# Level Six Science

## Scientific Process

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Scientific Discoveries	Sample Activity No.
Understand that scientific knowledge changes as new information, technology, and discoveries occur. Identify scientific discoveries of the past 10 years based on new technology. ....	.6829, 6815
<b>Conduct an Experiment</b> Design/conduct an experiment using scientific processes; identify independent, dependent, and constant variables and instruments to collect/analyze data. ....	.6817
<b>Variables in an Experiment</b> Describe how change in one or more variables can alter outcome of an experiment. ....	.6857
<b>Elements in an Investigation</b> Explain importance of accurate record keeping, control, and disclosure in replication of an investigation. ....	.6821
<b>Collecting and Displaying Data</b> Use a computer to collect, organize, analyze, and report scientific findings through graphical representation. ....	.6823
<b>Safety Procedures</b> Identify appropriate safety procedures in home, classroom, and community. ....	.6825
<b>Ethics in Science</b> Explain the demands of science ethics involving research on human subjects, and the ethical treatment of animals in scientific research. ....	.6827
<b>Proving Scientific Experiments</b> Understand that conclusions are based on scientific evidence from investigations and sources. ....	.6831
<b>Important Scientists</b> Identify accomplishments of these scientists: Marie Curie, Albert Einstein, Lewis Howard Latimer, and Isaac Newton. ....	.6833
<b>Technology</b> Describe scientific contributions resulting in technological products, and benefits and limitations of electronic information sources. ....	.66955, 66956, 66957, 66958, 66959, 66960, 66961, 66962, 66971, 66972

## Properties of Matter

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<b>Characteristics of Objects</b> Identify differences between substances (e.g., mass, volume, shape, density, texture, light, and reaction to heat), and cite examples of objects. ....	.6836
<b>Different States of Matter</b> Identify states of matter: solid, liquid, or gas, and cite examples. Explain molecular motion when matter changes from solid to liquid to gas. ....	.6837
<b>Elements and Compounds</b> Identify differences between elements and compounds as substances; state which can be separated by physical or chemical means. ....	.6841
<b>Periodic Table</b> Use the periodic table to identify symbols for elements: oxygen, sodium, copper, carbon, hydrogen, chlorine, aluminum, helium, gold, silver, iron, nitrogen, and silicon. ....	.6845
<b>Mixture and Solution Examples</b> Identify substances as mixtures and solutions; e.g., paint, cereal, milk, lemonade, soda, and ocean water. ....	.6849

## Characteristics of Plants

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<b>Scientific Vocabulary</b> Define these terms: autotroph, eukaryote, photosynthesis, cellulose, vacuole, chloroplast, and chlorophyll. ....	.6893, 6894
<b>Necessities for Plant Survival</b> Name the things that plants need to survive on land. ....	.6895
<b>Construct and Label a Plant Cell</b> Draw a diagram of a plant cell and label the cell wall, cell membrane, chloroplasts, vacuoles, nucleus, and cytoplasm. ....	.6897
<b>Adaptation to Environments</b> Compare and contrast how plants adapt to their environments: deserts, lakes, jungles, and polar regions, including the pasque flower, staghorn fern, bristlecone pine, water lily, barrel cactus, and Venus flytrap. ....	.6899

# Level Six Science

## Characteristics of Plants

*continued*

	Sample Activity No.
<b>Vascular System</b>	
Investigate a plant's vascular system; predict result of celery stalk in vase of colored water. ....	.6903
<b>Photosynthesis</b>	
Describe process and products of photosynthesis. ....	.6905
<b>Scientific Contributions</b>	
Describe contributions of these scientists: Joseph Priestley, Jan Baptista van Helmont, Jan Ingenhousz, T. W. Englemann, Julius Sachs, and Melvin Calvin. ....	.6907
<b>Structure of a Fern Plant</b>	
Describe structure of a fern plant, draw a diagram, and label the structures. ....	.6913
<b>Effects of Environments</b>	
Compare and contrast sizes and environments of nonvascular and vascular plants. ....	.6915
<b>Seed Plants</b>	
Identify seed plant characteristics, main parts of seed and their functions, and how seeds disperse and germinate. ....	.6917
<b>Plant Vocabulary</b>	
Define plant terms: phloem, xylem, seed, embryo, cotyledon, germination, stomata, transpiration, cambium, and root cap. ....	.6919
<b>Leaves, Stems, and Roots</b>	
Describe functions of leaves, stems, and roots. ....	.6921
<b>Examples of Gymnosperms</b>	
List examples and characteristics of gymnosperms, their environments, and four products they produce. ....	.6923
<b>Plant Hormones</b>	
Identify these terms: tropism, hormone, and auxin, and functions that plant hormones control. ....	.6929
<b>Stimulus and Response in Plants</b>	
Identify three stimuli that produce plant responses. ....	.6931
<b>Energy, Force, and Motion</b>	
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<b>Six Forms of Energy</b>	
Identify forms of energy: mechanical, electrical, chemical, heat, and nuclear, and the units that quantify them. ....	.6853
<b>Sources of Energy</b>	
Identify different sources of energy (e.g. heat sources and mechanical motion). ....	.6855
<b>Kinetic and Potential Energy</b>	
Explain kinetic and potential energy as states of energy and cite examples. ....	.6819
<b>Fossil Fuels</b>	
Cite fossil fuels (coal, carbon, oil, and natural gas) as natural resources, and their environmental impact. ....	.6859
<b>Phases of Matter</b>	
Identify phases of matter, their physical changes, and how matter can change phases by adding or removing energy. ....	.6861
<b>Water Expansion and Contraction</b>	
Explain effects of expansion and contraction on water. ....	.6863
<b>Changing States of Water</b>	
Describe the states of water: condensation, freezing, melting, and boiling. Identify freezing point and boiling point of water in Celsius and Fahrenheit. ....	.6865
<b>Force, Motion, and Friction</b>	
Describe the relationship between force and motion; explain friction. ....	.6867
<b>Measuring Motion</b>	
Define how motion is measured in speed, distance, and time. ....	.6869
<b>Laws of Motion</b>	
Explain Isaac Newton's three laws of motion and his law of universal gravitation, give examples, and create graph or chart. ....	.6871

# Level Six Science

## Electricity and Magnetism

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**Natural Magnetic Mineral** **Sample Activity No.**  
Name a naturally magnetic mineral (magnetite or lodestone), and describe its discovery by the ancient Greeks. ....6873

**Law of Magnetism**  
Define and explain the law of magnetism. Observe, record, and name objects that are and are not attracted to magnets (eg. paper, toothpick, paper clip, wire). ....6875

**Electromagnetism**  
Describe how electricity and magnetism are related (both involve motion of electrons). Describe electromagnetism and how magnetism can be produced from electricity. ....6879

**Electromagnets**  
Explain the structure and operation of electromagnets; identify common household objects in which electromagnets are used; explain advantages of electromagnets over natural or permanent magnets. ....6881

**Construct an Electromagnet**  
Construct a simple electromagnet; test its strength; describe materials, procedures; record observations and results of test. ....6883

**Electrical and Mechanical Energy**  
Relate electromagnetism to an electric motor; describe conversion of electric energy into mechanical energy. ....6885

**Electricity from Magnetism**  
Describe the process of producing electricity from magnetism. ....6887

**Electric Generators**  
Describe operation of an electric generator; identify ways communities use large generators. ....6889

**Scientific Contributions**  
Describe scientific contributions of Hans Christian Oersted, Michael Faraday, and Joseph Henry. ....6891

## Earth, Moon, and Sun

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**Gravity**  
Identify role of gravity as it relates to Earth, Moon, and Sun. ....6935

**Revolution and Rotation**  
Distinguish between revolution and rotation. ....6937

**Phases of the Moon**  
Describe the phases of the Moon. ....6939

**Causes of Day and Night**  
Describe the causes of day and night. ....6941

**Solar and Lunar Eclipses**  
Describe positions of Earth, Moon, and Sun during a solar eclipse and a lunar eclipse. ....6947

## Human Body

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**Body and Mind**  
Describe ways to say no to health risks. Describe dangers and lifelong effects of using illegal drugs, alcohol, and tobacco, and ways to resist peer pressure. ....66963, 66964, 66965, 66966, 66967, 66968, 66969, 66970